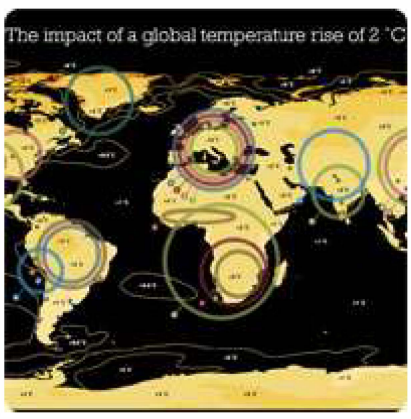
© Crown copyright • www.metoffice.gov.uk

# Tackling temperature rise

7 December 2009




As world leaders gather in Copenhagen for the UN Climate Change Conference, a new map has been launched that highlights the importance of limiting mean global temperature rise to no more than 2 °C above those prior to the industrial revolution.

The Met Office map — The impacts of a global temperature rise of 2 °C — has been produced to complement a similar map, published in October by the UK Government and the Met Office, exploring the impacts on a world if the mean temperature was allowed to climb to 4 °C above the pre-industrial climate average. The two maps together show the range of climate impacts that can be avoided if we act now to reduce global emissions to keep global temperatures below 2 °C.

Vicky Pope, Head of Climate Change Advice at the Met Office, said: “Restricting overall global warming to 2 °C above pre-industrial levels won’t eliminate the impacts of climate change, but it will limit the risk of dangerous climate change.

“If emissions are allowed to continue unchecked, our research shows that they are likely to lead to warming of 4 °C or more by the end of the century. This increases the risk of dangerous feedbacks — such as the release of methane from melting permafrost — that will amplify the warming and lead to irreversible damage to the world’s climate and ecosystems.”

The differences between the impacts of a global mean temperature rise of 2 °C and 4 °C are stark. A rise of 4 °C could result in a decrease in yields of all major cereal crops across most major regions of production. However, by limiting temperature rises to 2 °C the production of some cereal crops could actually increase at mid-to-high latitudes, with negative impacts limited to regions where farming is already under threat, especially in semi-arid and tropical regions.

Similarly, limiting the rise in global temperatures to 2 °C could halve the average sea-level rise from 80 cm to 40 cm, when compared with a temperature rise closer to four degrees.

Latest studies from the ENSEMBLES research project have shown that emissions of $CO_2$ will need to be reduced close to zero by the end of this century to be confident of avoiding a rise in the mean global temperature beyond 2 °C.

Dr Vicky Pope talks about the climate change conference and the science behind it.

**Watch Vicky’s video**

**Download the transcript** (PDF, 94 kB)

**The impact of a global temperature rise of 2 °C** (PDF, 1.4 MB)

**The impact of a global temperature rise of 4 °C** (requires Flash)

**Contact information**

Met Office Press Office: **+44 (0)1392 886655**

Email: Press Office

Met Office Customer Centre: **0870 900 0100**

If you're outside the UK: **+44 (0)1392 885680**

# Conference of Parties (CoP)

Dr Vicky Pope, Head of Climate Change Advice

**What is CoP?**
The UN framework convention on climate change organises the Conference of Parties or CoP every year to discuss the progress on agreeing emissions reductions, to reduce the impacts of climate change. CoP this year takes place in Copenhagen on the 7–18 December and the plan is to agree a new target to take over from the Kyoto target which was agreed a few years ago.

**Why is it important?**
It's very important because the Kyoto agreement ends in 2012. It reaches an agreement this year to take over from that, so that we can make bigger cuts in emissions and agree a framework to make sure that we avoid dangerous climate change.

**Why do we need to act now?**
It's really important to reduce emissions as quickly as possible because if we make those cuts we stand a reasonable chance of keeping temperature increases down to 2 °C.

**What role will science play at the conference?**
Science plays a vital role in making sure that we understand how much emissions need to be cut in order to limit the amount of warming. We can use climate models to asses how the emissions and the amount of carbon dioxide and other greenhouse gases in the atmosphere will affect the temperature and the climate generally. By doing that we can asses what levels of climate change are dangerous and what we need to avoid and, therefore, inform the policymakers on how much they need to cut emissions.

**How is the Met Office Hadley Centre supporting the negotiations?**
Over many years the Met Office Hadley Centre has developed climate models which are at the forefront of the science, to help provide the best possible information for making decisions. These are shared around the world with other climate modellers and policymakers through the Intergovernmental Panel on Climate Change and this information is published at regular intervals. Since the last IPCC report in 2007 many of the results have been published and these are helping to inform the negotiations in Copenhagen.

**How strong is the evidence for action?**
The evidence is clear from the science that we need to reduce emissions as quickly as possible and as much as possible. And everybody going to CoP, I think, recognises this.